

SEQUENCE LISTING

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Heinrikson, Robert L.

<120> SUBSTRATES AND ASSAYS FOR BETA-SECRETASE ACTIVITY

<130> 29915/00281

<140> 60/219,795

<141> 2000-07-19

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<170> PatentIn Ver. 2.0

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| Leu | Pro | Ala | His | Gly | Thr | Gln | His | Gly | Ile | Arg | Leu | Pro | Leu | Arg | Ser |
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| Gly | Leu | Gly | Gly | Ala | Pro | Leu | Gly | Leu | Arg | Leu | Pro | Arg | Glu | Thr | Asp |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Glu | Glu | Pro | Glu | Glu | Pro | Gly | Arg | Arg | Gly | Ser | Phe | Val | Glu | Met | Val |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Asp | Asn | Leu | Arg | Gly | Lys | Ser | Gly | Gln | Gly | Tyr | Tyr | Val | Glu | Met | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Val | Gly | Ser | Pro | Pro | Gln | Thr | Leu | Asn | Ile | Leu | Val | Asp | Thr | Gly | Ser |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ser | Asn | Phe | Ala | Val | Gly | Ala | Ala | Pro | His | Pro | Phe | Leu | His | Arg | Tyr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Tyr | Gln | Arg | Gln | Leu | Ser | Ser | Thr | Tyr | Arg | Asp | Leu | Arg | Lys | Gly | Val |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Tyr | Val | Pro | Tyr | Thr | Gln | Gly | Lys | Trp | Glu | Gly | Glu | Leu | Gly | Thr | Asp |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
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| Ser | Leu | Glu | Pro | Phe | Phe | Asp | Ser | Leu | Val | Lys | Gln | Thr | His | Val | Pro |
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| Asn | Leu | Phe | Ser | Leu | His | Leu | Cys | Gly | Ala | Gly | Phe | Pro | Leu | Asn | Gln |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
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| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Asp | His | Ser | Leu | Tyr | Thr | Gly | Ser | Leu | Trp | Tyr | Thr | Pro | Ile | Arg | Arg |
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| Glu | Trp | Tyr | Tyr | Glu | Val | Ile | Ile | Val | Arg | Val | Glu | Ile | Asn | Gly | Gln |
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| Asp | Leu | Lys | Met | Asp | Cys | Lys | Glu | Tyr | Asn | Tyr | Asp | Lys | Ser | Ile | Val |
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| Asp | Ser | Gly | Thr | Thr | Asn | Leu | Arg | Leu | Pro | Lys | Lys | Val | Phe | Glu | Ala |
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Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
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Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
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| Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser |     |         |
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| Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val |     |         |
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| Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser |     |         |
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| Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val |     |         |
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| Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser Thr Leu Met Thr |     |         |
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Glu Asn Tyr Xaa Asn  
20

<210> 29  
<211> 23  
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<213> Artificial Sequence

<220>  
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peptide sequence

<400> 29  
Tyr Arg Tyr Gln Ser His Asp Tyr Ala Phe Ser Ser Val Glu Lys Leu  
1 5 10 15  
Leu His Ala Leu Gly Gly Cys  
20

<210> 30  
<211> 23  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 30

Tyr Arg Tyr Gln Ser His Asp Tyr Ala Phe Ser Ser Val Glu Lys Leu  
1 5 10 15

Leu His Ala Leu Gly Gly Cys  
20

<210> 31

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 31

Leu Val Asn Met Ala Glu Gly Asp  
1 5

<210> 32

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 32

Arg Gly Ser Met Ala Gly Val Leu  
1 5

<210> 33

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 33

Gly Thr Gln His Gly Ile Arg Leu  
1 5

<210> 34

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
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<400> 34

Ser Ser Asn Phe Ala Val Gly Ala  
1 5

<210> 35  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 35  
Gly Leu Ala Tyr Ala Glu Ile Ala  
1 5

<210> 36  
<211> 8  
<212> PRT  
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<220>  
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<400> 36  
His Leu Cys Gly Ser His Leu Val  
1 5

<210> 37  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<400> 37  
Cys Gly Glu Arg Gly Phe Phe Tyr  
1 5

<210> 38  
<211> 7  
<212> PRT  
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<220>  
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peptide sequence

<400> 38  
Gly Val Leu Leu Ser Arg Lys  
1 5

<210> 39  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic

peptide sequence

<400> 39

Val Gly Ser Gly Val Leu Leu  
1 5

<210> 40

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 40

Val Gly Ser Gly Val  
1 5

<210> 41

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

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<222> (9)

<223> Xaa= cysteic acid

<400> 41

Lys Val Glu Ala Leu Tyr Leu Val Xaa Gly Glu Arg  
1 5 10

<210> 42

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 42

Trp Arg Arg Val Glu Ala Leu Tyr Leu Val Glu Gly Glu Arg Lys  
1 5 10 15

<210> 43

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 43  
Lys Val Glu Ala Asn Tyr Leu Val Glu Gly Glu Arg Lys Lys  
1 5 10

<210> 44  
<211> 4  
<212> PRT  
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<220>  
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peptide sequence

<400> 44  
Met Leu Leu Leu  
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<210> 45  
<211> 6  
<212> PRT  
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<220>  
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peptide sequence

<400> 45  
Asp Ala Ala His Pro Gly  
1 5

<210> 46  
<211> 14  
<212> PRT  
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<220>  
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peptide sequence

<400> 46  
Lys Val Glu Ala Asn Tyr Asp Val Glu Gly Glu Arg Lys Lys  
1 5 10

<210> 47  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 47  
Lys Val Glu Ala Asn Leu Ala Val Glu Gly Glu Arg Lys Lys  
1 5 10

<210> 48  
<211> 14



<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 48  
Lys Val Glu Ala Leu Tyr Ala Val Glu Gly Glu Arg Lys Lys  
1 5 10

<210> 49  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa = E, G, I, D, T, cysteic acid or S

<400> 49  
Xaa Ala Asn Tyr Glu Val Glu Phe  
1 5

<210> 50  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<222> (2)  
<223> Xaa= A, V, I, S, H, Y, T or F

<400> 50  
Glu Xaa Asn Tyr Glu Val Glu Phe  
1 5

<210> 51  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
<221> SITE  
<222> (3)  
<223> Xaa= N, L, K, S, G, T, D, A, Q, or E

<400> 51  
Glu Ala Xaa Tyr Glu Val Glu Phe  
1 5

<210> 52  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
<221> SITE  
<222> (4)  
<223> Xaa= Y, L, M, Nle, F or H

<400> 52  
Glu Ala Asn Xaa Glu Val Glu Phe  
1 5

<210> 53  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (5)  
<223> Xaa= E, A, D, M, Q, S or G

<400> 53  
Glu Ala Asn Tyr Xaa Val Glu Phe  
1 5

<210> 54  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (6)  
<223> Xaa= V, A, N, T, L, F or S

<400> 54  
Glu Ala Asn Tyr Glu Xaa Glu Phe  
1 5

<210> 55

<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (7)  
<223> Xaa= E, G, F, H, cysteic acid or S

<400> 55  
Glu Ala Asn Tyr Glu Val Xaa Phe  
1 5

<210> 56  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (8)  
<223> Xaa= F, W, G, A, H, P, G, N, S or E

<400> 56  
Glu Ala Asn Tyr Glu Val Glu Xaa  
1 5

<210> 57  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= E, G, I, D, T, cyeteic acid or S

<400> 57  
Xaa Val Leu Leu Ala Ala Gly Trp  
1 5

<210> 58  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic

peptide sequence

<220>  
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<223> Xaa= A, V, I, S, H, Y, T or F

<400> 58  
Gly Xaa Leu Leu Ala Ala Gly Trp  
1 5

<210> 59  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= N, L, K, S, G, T, D, A, Q or E

<400> 59  
Gly Val Xaa Leu Ala Ala Gly Trp  
1 5

<210> 60  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= Y, L, M, Nle, F or H

<400> 60  
Gly Val Leu Xaa Ala Ala Gly Trp  
1 5

<210> 61  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (5)  
<223> Xaa= E, A, D, M, Q, S or G

<400> 61

Gly Val Leu Leu Xaa Ala Gly Trp  
1 5

<210> 62

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

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<222> (6)

<223> Xaa= V, A, N, T, L, F or S

<400> 62

Gly Val Leu Leu Ala Xaa Gly Trp  
1 5

<210> 63

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

<221> SITE

<222> (7)

<223> Xaa= E, G, F, H, cysteic acid or S

<400> 63

Gly Val Leu Leu Ala Ala Xaa Trp  
1 5

<210> 64

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

<221> SITE

<222> (8)

<223> Xaa= F, W, G, A, H, P, G, N or S

<400> 64

Gly Val Leu Leu Ala Ala Gly Xaa  
1 5

<210> 65

<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<400> 65  
Xaa Ile Lys Met Asp Asn Phe Gly  
1 5

<210> 66  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (2)  
<223> Xaa= A, V, I, S, H, Y, T or F

<400> 66  
Ile Xaa Lys Met Asp Asn Phe Gly  
1 5

<210> 67  
<211> 8  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
<221> SITE  
<222> (3)  
<223> Xaa= N, L, K, S, G, T, D, A, Q or E

<400> 67  
Ile Ile Xaa Met Asp Asn Phe Gly  
1 5

<210> 68  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic

peptide sequence

<220>  
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<223> Xaa= Y, L, M, Nle, F or H

<400> 68  
Ile Ile Lys Xaa Asp Asn Phe Gly  
1 5

<210> 69  
<211> 8  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= E, A, D, M, Q, S or G

<400> 69  
Ile Ile Lys Met Xaa Asn Phe Gly  
1 5

<210> 70  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

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<223> Xaa= V, A, N,T, L, F or S

<400> 70  
Ile Ile Lys Met Asp Xaa Phe Gly  
1 5

<210> 71  
<211> 8  
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<220>  
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peptide sequence

<220>  
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<222> (7)

<223> Xaa= E, G, F, H, cysteic acid or S

<400> 71  
Ile Ile Lys Met Asp Asn Xaa Gly  
1 5

<210> 72  
<211> 8  
<212> PRT  
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peptide sequence

<220>  
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<223> Xaa= F, W, G, A, H, P, G, N or S

<400> 72  
Ile Ile Lys Met Asp Asn Phe Xaa  
1 5

<210> 73  
<211> 10  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= E, G, I, D, T, cysteic acid or S

<400> 73  
Xaa Ser Ser Asn Leu Glu Met Thr His Ala  
1 5 10

<210> 74  
<211> 10  
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<220>  
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peptide sequence

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<222> (2)  
<223> Xaa= A, V, I, S, H, Y, T or F

<400> 74  
Asp Xaa Ser Asn Leu Glu Met Thr His Ala  
1 5 10



<210> 75  
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<220>  
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peptide sequence

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<223> Xaa= N, L, K, S, G, T, D, A, Q or E

<400> 75  
Asp Ser Xaa Asn Leu Glu Met Thr His Ala  
1 5 10

<210> 76  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

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<222> (4)  
<223> Xaa= Y, L, M, Nle, F or H

<400> 76  
Asp Ser Ser Xaa Met Thr His Ala  
1 5

<210> 77  
<211> 10  
<212> PRT  
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<220>  
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peptide sequence

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<223> Xaa= E, A, D, M, Q, S or G

<400> 77  
Asp Ser Ser Asn Leu Glu Xaa Thr His Ala  
1 5 10

<210> 78  
<211> 10  
<212> PRT  
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<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

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<222> (8)

<223> Xaa= V, A, N, T, L, F or S

<400> 78

Asp Ser Ser Asn Leu Glu Met Xaa His Ala  
1 5 10

<210> 79

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

<221> SITE

<222> (8)

<223> Xaa= E, G, F, H, cysteic acid or S

<400> 79

Asp Ser Asn Leu Glu Met Thr Xaa Ala  
1 5

<210> 80

<211> 9

<212> PRT

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<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>

<221> SITE

<222> (9)

<223> Xaa= F, W, G, A, H, P, G, N or S

<400> 80

Asp Ser Asn Leu Glu Met Thr His Xaa  
1 5

<210> 81

<211> 8

<212> PRT

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<220>

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peptide sequence

<220>

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<222> (1)

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<220>

<221> SITE

<222> (7)

<223> Xaa= cysteic acid

<400> 81

Xaa His Gly Phe Gln Leu Xaa His  
1 5

<210> 82

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
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<220>

<221> SITE

<222> (2)

<223> Xaa= A, V, I, S, H, Y, T or F

<220>

<221> SITE

<222> (7)

<223> Xaa= cysteic acid

<400> 82

Thr Xaa Gly Phe Gln Leu Xaa His  
1 5

<210> 83

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

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peptide sequence

<220>

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<222> (3)

<223> Xaa= N, L, K, S, G, T, D, A, Q or E

<220>

<221> SITE

<222> (7)

<223> Xaa= cysteic acid

<400> 83

Thr His Xaa Phe Gln Leu Xaa His  
1 5

<210> 84

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic peptide sequence

<220>

<221> SITE

<222> (4)

<223> Xaa= Y, L, M, Nle, F or H

<220>

<221> SITE

<222> (7)

<223> Xaa= cysteic acid

<400> 84

Thr His Gly Xaa Gln Leu Xaa His  
1 5

<210> 85

<211> 8

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<222> (5)

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<220>

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<223> Xaa= cysteic acid

<400> 85

Thr His Gly Phe Xaa Leu Xaa His  
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<210> 86

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<212> PRT

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<222> (6)

<223> Xaa= V, A, N, T, L, F or S

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<400> 86  
Thr His Gly Phe Gln Xaa Xaa His  
1 5

<210> 87  
<211> 8  
<212> PRT  
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<220>  
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peptide sequence

<220>  
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<223> Xaa= E, G, F, H, cysteic acid or S

<400> 87  
Thr His Gly Phe Gln Leu Xaa His  
1 5

<210> 88  
<211> 8  
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peptide sequence

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<223> Xaa= F, W, G, A, H, P, G, N or S

<400> 88  
Thr His Gly Phe Gln Leu Xaa Xaa  
1 5

<210> 89  
<211> 8  
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peptide sequence

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<400> 89

Xaa Tyr Thr His Ser Phe Ser Pro  
1 5

<210> 90  
<211> 8  
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peptide sequence

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<400> 90  
Xaa Xaa Thr His Ser Phe Ser Pro  
1 5

<210> 91  
<211> 8  
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peptide sequence

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<400> 91  
Xaa Tyr Xaa His Ser Phe Ser Pro  
1 5

<210> 92  
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peptide sequence

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<222> (1)  
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<400> 92  
Xaa Tyr Thr Xaa Ser Phe Ser Pro  
1 5

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peptide sequence

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Xaa Tyr Thr His Xaa Phe Ser Pro  
1 5

<210> 94  
<211> 8  
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peptide sequence

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<223> Xaa= V, A, N, T, L, F or S

<400> 94  
Xaa Tyr Thr His Ser Xaa Ser Pro  
1 5

<210> 95  
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peptide sequence

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<400> 95  
Xaa Tyr Thr His Ser Phe Xaa Pro  
1 5

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peptide sequence

<220>  
<221> SITE  
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<223> Xaa= F, W, G, A, H, P, G, N or S

<400> 96  
Xaa Tyr Thr His Ser Phe Ser Xaa  
1 5

<210> 97  
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<212> PRT  
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peptide sequence

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<220>  
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<223> Xaa= any amino acid

<220>

<221> SITE

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<400> 97

Xaa Thr Asp Xaa Gly Ser Xaa Gly  
1 5

<210> 98

<211> 8

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<220>

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peptide sequence

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<223> Xaa=A, V, I, S, H, Y, T or F

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Ser Xaa Asp Xaa Gly Ser Xaa Gly  
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peptide sequence

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<400> 99

Ser Thr Xaa Xaa Gly Ser Xaa Gly  
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<210> 102

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<222> (6)

<223> Xaa= V, A, N, T, L, F or S

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<210> 103

<211> 8

<212> PRT

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<220>

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<222> (7)

<223> Xaa= E, G, F, H, cysteic acid or S

<400> 103

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<210> 104

<211> 8

<212> PRT

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<210> 105  
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<210> 107  
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Xaa Phe Ala Xaa Xaa Xaa Xaa Asn  
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Xaa Phe Ala Xaa Xaa Xaa Xaa Asn  
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<400> 112  
Xaa Phe Ala Xaa Xaa Xaa Xaa Xaa  
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<210> 113  
<211> 9  
<212> PRT  
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peptide sequence

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Glu Val Asn Leu Asp Ala Glu Phe Arg  
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<210> 114  
<211> 7  
<212> PRT  
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<220>  
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<400> 114  
Asp Tyr Lys Asp Asp Asp Lys  
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<210> 115  
<211> 17  
<212> PRT  
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Ala Cys Gly Ser Glu Ser Met Asp Ser Gly Ile Ser Leu Asp Asn Lys  
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Trp

<210> 116  
<211> 17  
<212> PRT  
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<220>  
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<400> 116  
Trp Lys Lys Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Lys  
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Lys

<210> 117



<211> 11  
<212> PRT  
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<400> 117  
Ala Asn Leu Ser Thr Phe Ala Gln Pro Arg Arg  
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<210> 118  
<211> 22  
<212> PRT  
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<220>  
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peptide sequence

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Tyr Arg Tyr Gln Ser His Asp Tyr Ala Phe Ser Ser Val Glu Lys Leu  
1 5 10 15

Leu His Leu Gly Gly Cys  
20

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<220>  
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peptide sequence

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Tyr Arg Tyr Gln Ser His Asp Tyr Ala Phe Ser Ser Val Glu Lys Leu  
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Leu His Leu Gly Gly Cys  
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Lys Thr Ile Thr Leu Glu Val Glu Pro Ser  
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<210> 121  
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<211> 11  
<212> PRT  
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<220>  
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peptide sequence

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Val Glu Ala Leu Tyr Leu Val Glu Gly Glu Arg  
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<210> 123  
<211> 363  
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<220>  
<223> galactosyltransferase

<400> 123  
Met Ala Ser Lys Ser Trp Leu Asn Phe Leu Thr Phe Leu Cys Gly Ser  
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Ala Ile Gly Phe Leu Leu Cys Ser Gln Leu Phe Ser Ile Leu Leu Gly  
20 25 30  
Glu Lys Val Asp Thr Gln Pro Asn Val Leu His Asn Asp Pro His Ala  
35 40 45  
Arg His Ser Asp Asp Asn Gly Gln Asn His Leu Glu Gly Gln Met Asn  
50 55 60  
Phe Asn Ala Asp Ser Ser Gln His Lys Asp Glu Asn Thr Asp Ile Ala  
65 70 75 80  
Glu Asn Leu Tyr Gln Lys Val Arg Ile Leu Cys Trp Val Met Thr Gly  
85 90 95  
Pro Gln Asn Leu Glu Lys Lys Ala Lys His Val Lys Ala Thr Trp Ala  
100 105 110  
Gln Arg Cys Asn Lys Val Leu Phe Met Ser Ser Glu Glu Asn Lys Asp  
115 120 125

Phe Pro Ala Val Gly Leu Lys Thr Lys Glu Gly Arg Asp Gln Leu Tyr  
130 135 140

Trp Lys Thr Ile Lys Ala Phe Gln Tyr Val His Glu His Tyr Leu Glu  
145 150 155 160

Asp Ala Asp Trp Phe Leu Lys Ala Asp Asp Thr Tyr Val Ile Leu  
165 170 175

Asp Asn Leu Arg Trp Leu Leu Ser Lys Tyr Asp Pro Glu Glu Pro Ile  
180 185 190

Tyr Phe Gly Arg Arg Phe Lys Pro Tyr Val Lys Gln Gly Tyr Met Ser  
195 200 205

Gly Gly Ala Gly Tyr Val Leu Ser Lys Glu Ala Leu Lys Arg Phe Val  
210 215 220

Asp Ala Phe Lys Thr Asp Lys Cys Thr His Ser Ser Ser Ile Glu Asp  
225 230 235 240

Leu Ala Leu Gly Arg Cys Met Glu Ile Met Asn Val Glu Ala Gly Asp  
245 250 255

Ser Arg Asp Thr Ile Gly Lys Glu Thr Phe His Pro Phe Val Pro Glu  
260 265 270

His His Leu Ile Lys Gly Tyr Leu Pro Arg Thr Phe Trp Tyr Trp Asn  
275 280 285

Tyr Asn Tyr Tyr Pro Pro Val Glu Gly Pro Gly Cys Cys Ser Asp Leu  
290 295 300

Ala Val Ser Phe His Tyr Val Asp Ser Thr Thr Met Tyr Glu Leu Glu  
305 310 315 320

Tyr Leu Val Tyr His Leu Arg Pro Tyr Gly Tyr Leu Tyr Arg Tyr Gln  
325 330 335

Pro Thr Leu Pro Glu Arg Ile Leu Lys Glu Ile Ser Gln Ala Asn Lys  
340 345 350

Asn Glu Asp Thr Lys Val Lys Leu Gly Asn Pro  
355 360

<210> 124

<211> 405

<212> PRT

<213> Homo sapiens

<220>

<223> Homo sapiens sialyltransferase 1

<400> 124

Ile His Thr Asn Leu Lys Lys Lys Phe Ser Cys Cys Val Leu Val Phe  
1 5 10 15

Leu Leu Phe Ala Val Ile Cys Val Trp Lys Glu Lys Lys Lys Gly Ser  
20 25 30

Tyr Tyr Asp Ser Phe Lys Leu Gln Thr Lys Glu Phe Gln Val Leu Lys

| 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Gly | Lys | Leu | Ala | Met | Gly | Ser | Asp | Ser | Gln | Ser | Val | Ser | Ser |
| 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ser | Ser | Thr | Gln | Asp | Pro | His | Arg | Gly | Arg | Gln | Thr | Leu | Gly | Ser | Leu |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Arg | Gly | Leu | Ala | Lys | Ala | Lys | Pro | Glu | Ala | Ser | Phe | Gln | Val | Trp | Asn |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Lys | Asp | Ser | Ser | Ser | Lys | Asn | Leu | Ile | Pro | Arg | Leu | Gln | Lys | Ile | Trp |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Lys | Asn | Tyr | Leu | Ser | Met | Asn | Lys | Tyr | Lys | Val | Ser | Tyr | Lys | Gly | Pro |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Gly | Pro | Gly | Ile | Lys | Phe | Ser | Ala | Glu | Ala | Leu | Arg | Cys | His | Leu | Arg |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Asp | His | Val | Asn | Val | Ser | Met | Val | Glu | Val | Thr | Asp | Phe | Pro | Phe | Asn |
| 145 |     |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     | 160 |
| Thr | Ser | Glu | Trp | Glu | Gly | Tyr | Leu | Pro | Lys | Glu | Ser | Ile | Arg | Thr | Lys |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ala | Gly | Pro | Trp | Gly | Arg | Cys | Ala | Val | Val | Ser | Ser | Ala | Gly | Ser | Leu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Lys | Ser | Ser | Gln | Leu | Gly | Arg | Glu | Ile | Asp | Asp | His | Asp | Ala | Val | Leu |
|     |     |     | 195 |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Arg | Phe | Asn | Gly | Ala | Pro | Thr | Ala | Asn | Phe | Gln | Gln | Asp | Val | Gly | Thr |
|     |     |     | 210 |     |     | 215 |     |     |     |     |     | 220 |     |     |     |
| Lys | Thr | Thr | Ile | Arg | Leu | Met | Asn | Ser | Gln | Leu | Val | Thr | Thr | Glu | Lys |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Arg | Phe | Leu | Lys | Asp | Ser | Leu | Tyr | Asn | Glu | Gly | Ile | Leu | Ile | Val | Trp |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asp | Pro | Ser | Val | Tyr | His | Ser | Asp | Ile | Pro | Lys | Trp | Tyr | Gln | Asn | Pro |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Asp | Tyr | Asn | Phe | Phe | Asn | Asn | Tyr | Lys | Thr | Tyr | Arg | Lys | Leu | His | Pro |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Asn | Gln | Pro | Phe | Tyr | Ile | Leu | Lys | Pro | Gln | Met | Pro | Trp | Glu | Leu | Trp |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Asp | Ile | Leu | Gln | Glu | Ile | Ser | Pro | Glu | Glu | Ile | Gln | Pro | Asn | Pro | Pro |
| 305 |     |     |     | 310 |     |     |     |     |     | 315 |     |     |     |     | 320 |
| Ser | Ser | Gly | Met | Leu | Gly | Ile | Ile | Ile | Met | Met | Thr | Leu | Cys | Asp | Gln |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Val | Asp | Ile | Tyr | Glu | Phe | Leu | Pro | Ser | Lys | Arg | Lys | Thr | Asp | Val | Cys |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Tyr | Tyr | Tyr | Gln | Lys | Phe | Phe | Asp | Ser | Ala | Cys | Thr | Met | Gly | Ala | Tyr |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| His | Pro | Leu | Leu | Tyr | Glu | Lys | Asn | Leu | Val | Lys | His | Leu | Asn | Gln | Gly |

|   |     |         |
|---|-----|---------|
| 370   | 375 | 380     |
| Thr Asp Glu Asp Ile Tyr Leu Leu Gly Lys Ala Thr Leu Pro Gly Phe |     |         |
| 385   | 390 | 395 400 |
| Arg Thr Ile His Cys   |     |         |
| 405   |     |         |
| <210> 125   |     |         |
| <211> 518   |     |         |
| <212> PRT   |     |         |
| <213> Homo sapiens  |     |         |
| <220>   |     |         |
| <223> Homo sapiens aspartyl protease 1                          |     |         |
| <400> 125   |     |         |
| Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp |     |         |
| 1   | 5   | 10 15   |
| Leu Leu Arg Ala Ala Pro Glu Leu Ala Pro Ala Pro Phe Thr Leu Pro |     |         |
| 20  | 25  | 30      |
| Leu Arg Val Ala Ala Ala Thr Asn Arg Val Val Ala Pro Thr Pro Gly |     |         |
| 35  | 40  | 45      |
| Pro Gly Thr Pro Ala Glu Arg His Ala Asp Gly Leu Ala Leu Ala Leu |     |         |
| 50  | 55  | 60      |
| Glu Pro Ala Leu Ala Ser Pro Ala Gly Ala Ala Asn Phe Leu Ala Met |     |         |
| 65  | 70  | 75 80   |
| Val Asp Asn Leu Gln Gly Asp Ser Gly Arg Gly Tyr Tyr Leu Glu Met |     |         |
| 85  | 90  | 95      |
| Leu Ile Gly Thr Pro Pro Gln Lys Leu Gln Ile Leu Val Asp Thr Gly |     |         |
| 100   | 105 | 110     |
| Ser Ser Asn Phe Ala Val Ala Gly Thr Pro His Ser Tyr Ile Asp Thr |     |         |
| 115   | 120 | 125     |
| Tyr Phe Asp Thr Glu Arg Ser Ser Thr Tyr Arg Ser Lys Gly Phe Asp |     |         |
| 130   | 135 | 140     |
| Val Thr Val Lys Tyr Thr Gln Gly Ser Trp Thr Gly Phe Val Gly Glu |     |         |
| 145   | 150 | 155 160 |
| Asp Leu Val Thr Ile Pro Lys Gly Phe Asn Thr Ser Phe Leu Val Asn |     |         |
| 165   | 170 | 175     |
| Ile Ala Thr Ile Phe Glu Ser Glu Asn Phe Phe Leu Pro Gly Ile Lys |     |         |
| 180   | 185 | 190     |
| Trp Asn Gly Ile Leu Gly Leu Ala Tyr Ala Thr Leu Ala Lys Pro Ser |     |         |
| 195   | 200 | 205     |
| Ser Ser Leu Glu Thr Phe Phe Asp Ser Leu Val Thr Gln Ala Asn Ile |     |         |
| 210   | 215 | 220     |
| Pro Asn Val Phe Ser Met Gln Met Cys Gly Ala Gly Leu Pro Val Ala |     |         |
| 225   | 230 | 235 240 |

Gly Ser Gly Thr Asn Gly Gly Ser Leu Val Leu Gly Gly Ile Glu Pro  
245 250 255

Ser Leu Tyr Lys Gly Asp Ile Trp Tyr Thr Pro Ile Lys Glu Glu Trp  
260 265 270

Tyr Tyr Gln Ile Glu Ile Leu Lys Leu Glu Ile Gly Gly Gln Ser Leu  
275 280 285

Asn Leu Asp Cys Arg Glu Tyr Asn Ala Asp Lys Ala Ile Val Asp Ser  
290 295 300

Gly Thr Thr Leu Leu Arg Leu Pro Gln Lys Val Phe Asp Ala Val Val  
305 310 315 320

Glu Ala Val Ala Arg Ala Ser Leu Ile Pro Glu Phe Ser Asp Gly Phe  
325 330 335

Trp Thr Gly Ser Gln Leu Ala Cys Trp Thr Asn Ser Glu Thr Pro Trp  
340 345 350

Ser Tyr Phe Pro Lys Ile Ser Ile Tyr Leu Arg Asp Glu Asn Ser Ser  
355 360 365

Arg Ser Phe Arg Ile Thr Ile Leu Pro Gln Leu Tyr Ile Gln Pro Met  
370 375 380

Met Gly Ala Gly Leu Asn Tyr Glu Cys Tyr Arg Phe Gly Ile Ser Pro  
385 390 395 400

Ser Thr Asn Ala Leu Val Ile Gly Ala Thr Val Met Glu Gly Phe Tyr  
405 410 415

Val Ile Phe Asp Arg Ala Gln Lys Arg Val Gly Phe Ala Ala Ser Pro  
420 425 430

Cys Ala Glu Ile Ala Gly Ala Val Ser Glu Ile Ser Gly Pro Phe  
435 440 445

Ser Thr Glu Asp Val Ala Ser Asn Cys Val Pro Ala Gln Ser Leu Ser  
450 455 460

Glu Pro Ile Leu Trp Ile Val Ser Tyr Ala Leu Met Ser Val Cys Gly  
465 470 475 480

Ala Ile Leu Leu Val Leu Ile Val Leu Leu Leu Pro Phe Arg Cys  
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Gln Arg Arg Pro Arg Asp Pro Glu Val Val Asn Asp Glu Ser Ser Leu  
500 505 510

Val Arg His Arg Trp Lys  
515

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<211> 255

<212> PRT

<213> Homo sapiens

<220>

<223> Homo sapiens syntaxin 6

<400> 126

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Met | Glu | Asp | Pro | Phe | Phe | Val | Val | Lys | Gly | Glu | Val | Gln | Lys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ala | Val | Asn | Thr | Ala | Gln | Gly | Leu | Phe | Gln | Arg | Trp | Thr | Glu | Leu | Leu |
|     |     | 20  |     |     |     |     | 25  |     |     |     |     |     | 30  |     |     |
| Gln | Asp | Pro | Ser | Thr | Ala | Thr | Arg | Glu | Glu | Ile | Asp | Trp | Thr | Thr | Asn |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Glu | Leu | Arg | Asn | Asn | Leu | Arg | Ser | Ile | Glu | Trp | Asp | Leu | Glu | Asp | Leu |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Asp | Glu | Thr | Ile | Ser | Ile | Val | Glu | Ala | Asn | Pro | Arg | Lys | Phe | Asn | Leu |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Asp | Ala | Thr | Glu | Leu | Ser | Ile | Arg | Lys | Ala | Phe | Ile | Thr | Ser | Thr | Arg |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Gln | Val | Val | Arg | Asp | Met | Lys | Asp | Gln | Met | Ser | Thr | Ser | Ser | Val | Gln |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ala | Leu | Ala | Glu | Arg | Lys | Asn | Arg | Gln | Ala | Leu | Leu | Gly | Asp | Ser | Gly |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |
| Ser | Gln | Asn | Trp | Ser | Thr | Gly | Thr | Thr | Asp | Lys | Tyr | Gly | Arg | Leu | Asp |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Arg | Glu | Leu | Gln | Arg | Ala | Asn | Ser | His | Phe | Ile | Glu | Glu | Gln | Gln | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Gln | Gln | Gln | Leu | Ile | Val | Glu | Gln | Gln | Asp | Glu | Gln | Leu | Glu | Leu | Val |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ser | Gly | Ser | Ile | Gly | Val | Leu | Lys | Asn | Met | Ser | Gln | Arg | Ile | Gly | Gly |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Glu | Leu | Glu | Glu | Gln | Ala | Val | Met | Leu | Glu | Asp | Phe | Ser | His | Glu | Leu |
|     | 195 |     |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Glu | Ser | Thr | Gln | Ser | Arg | Leu | Asp | Asn | Val | Met | Lys | Lys | Leu | Ala | Lys |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Val | Ser | His | Met | Thr | Ser | Asp | Arg | Arg | Gln | Trp | Cys | Ala | Ile | Ala | Ile |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Leu | Phe | Ala | Val | Leu | Leu | Val | Val | Leu | Ile | Leu | Phe | Leu | Val | Leu |     |
|     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |     | 255 |     |

<210> 127

<211> 1728

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: nucleic acid  
encoding recombinant fusion protein

<400> 127

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gttgaggagg agaaccgga cttctggaac cgcgaggcag ccgaggccct ggtgcccgc 120  
aagaagctgc agcctgcaca gacagccgcc aagaacctca tcattcttct gggcgatggg 180

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atgggggtgt ctacggtgac agctgccagg atcctaaaag ggcagaagaa ggacaaactg 240
gggcctgaga tacccttggc catggaccgc ttcccatatg tggctctgtc caagacatac 300
aatgtagaca aacatgtgcc agacagtggg gccacagcca cggcctacct gtgcggggtc 360
aagggcaact tccagacccat tggcttgagt gcagccgccc gctttaacca gtgcaacacg 420
acacgcggca acgaggtcat ctccgtgatg aatcgggcca agaaagcagg gaagtcagtg 480
ggagtggtaa ccaccacacg agtgcagcac gcctcgccag ccggcaccta cggccacacg 540
gtgaaccgca actgggtactc ggacgcccgc gtgcctgcct cggcccgcga ggaggggtgc 600
caggacatcg ctacgcagct catctccaac atggacattg acgtgatcct aggtggaggc 660
cgaaagtaca tgtttcccat gggaacccca gacctgagt acccagatga ctacagccaa 720
ggtgggacca ggctggacgg gaagaatctg gtgcaggaat ggctggcgaa gcgccagggt 780
gcccggtatg tgtggaaccg cactgagctc atgcaggctt ccctggaccc gtctgtgacc 840
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ctggacccct ccctgatgga gatgacagag gctgccctgc gcctgctgag caggaacccc 960
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gacgcccgcg acccaggtaa ctatgaagtt gaattccgaa gagcactcta cgtagagggt 1560
gaaagaggat tcttctacac tccaaaggca ctctacctcg tagagggtga aagaggattc 1620
ttctacacta gtctcatgac catagcctat gtcatggctg ccactctgccc cctcttcatg 1680
ctgccactct gcctcatggt ggactacaag gatgatgatg acaagtag 1728

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<210> 128

<211> 575

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: recombinant fusion protein sequence

<400> 128

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Gly Ile Ile Pro Val Glu Glu Glu Asn Pro Asp Phe Trp Asn Arg Glu
20             25             30

Ala Ala Glu Ala Leu Gly Ala Ala Lys Lys Leu Gln Pro Ala Gln Thr
35             40             45

Ala Ala Lys Asn Leu Ile Ile Phe Leu Gly Asp Gly Met Gly Val Ser
50             55             60

Thr Val Thr Ala Ala Arg Ile Leu Lys Gly Gln Lys Lys Asp Lys Leu
65             70             75             80

Gly Pro Glu Ile Pro Leu Ala Met Asp Arg Phe Pro Tyr Val Ala Leu
85             90             95

Ser Lys Thr Tyr Asn Val Asp Lys His Val Pro Asp Ser Gly Ala Thr
100            105            110

Ala Thr Ala Tyr Leu Cys Gly Val Lys Gly Asn Phe Gln Thr Ile Gly
115            120            125

Leu Ser Ala Ala Ala Arg Phe Asn Gln Cys Asn Thr Thr Arg Gly Asn
130            135            140

```



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Ile | Ser | Val | Met | Asn | Arg | Ala | Lys | Lys | Ala | Gly | Lys | Ser | Val | 145 | 150 | 155 | 160 |
| Gly | Val | Val | Thr | Thr | Thr | Arg | Val | Gln | His | Ala | Ser | Pro | Ala | Gly | Thr | 165 | 170 | 175 |     |
| Tyr | Ala | His | Thr | Val | Asn | Arg | Asn | Trp | Tyr | Ser | Asp | Ala | Asp | Val | Pro | 180 | 185 | 190 |     |
| Ala | Ser | Ala | Arg | Gln | Glu | Gly | Cys | Gln | Asp | Ile | Ala | Thr | Gln | Leu | Ile | 195 | 200 | 205 |     |
| Ser | Asn | Met | Asp | Ile | Asp | Val | Ile | Leu | Gly | Gly | Gly | Arg | Lys | Tyr | Met | 210 | 215 | 220 |     |
| Phe | Pro | Met | Gly | Thr | Pro | Asp | Pro | Glu | Tyr | Pro | Asp | Asp | Tyr | Ser | Gln | 225 | 230 | 235 | 240 |
| Gly | Gly | Thr | Arg | Leu | Asp | Gly | Lys | Asn | Leu | Val | Gln | Glu | Trp | Leu | Ala | 245 | 250 | 255 |     |
| Lys | Arg | Gln | Gly | Ala | Arg | Tyr | Val | Trp | Asn | Arg | Thr | Glu | Leu | Met | Gln | 260 | 265 | 270 |     |
| Ala | Ser | Leu | Asp | Pro | Ser | Val | Thr | His | Leu | Met | Gly | Leu | Phe | Glu | Pro | 275 | 280 | 285 |     |
| Gly | Asp | Met | Lys | Tyr | Glu | Ile | His | Arg | Asp | Ser | Thr | Leu | Asp | Pro | Ser | 290 | 295 | 300 |     |
| Leu | Met | Glu | Met | Thr | Glu | Ala | Ala | Leu | Arg | Leu | Leu | Ser | Arg | Asn | Pro | 305 | 310 | 315 | 320 |
| Arg | Gly | Phe | Phe | Leu | Phe | Val | Glu | Gly | Gly | Arg | Ile | Asp | His | Gly | His | 325 | 330 | 335 |     |
| His | Glu | Ser | Arg | Ala | Tyr | Arg | Ala | Leu | Thr | Glu | Thr | Ile | Met | Phe | Asp | 340 | 345 | 350 |     |
| Asp | Ala | Ile | Glu | Arg | Ala | Gly | Gln | Leu | Thr | Ser | Glu | Glu | Asp | Thr | Leu | 355 | 360 | 365 |     |
| Ser | Leu | Val | Thr | Ala | Asp | His | Ser | His | Val | Phe | Ser | Phe | Gly | Gly | Tyr | 370 | 375 | 380 |     |
| Pro | Leu | Arg | Gly | Ser | Ser | Ile | Phe | Gly | Leu | Ala | Pro | Gly | Lys | Ala | Arg | 385 | 390 | 395 | 400 |
| Asp | Arg | Lys | Ala | Tyr | Thr | Val | Leu | Leu | Tyr | Gly | Asn | Gly | Pro | Gly | Tyr | 405 | 410 | 415 |     |
| Val | Leu | Lys | Asp | Gly | Ala | Arg | Pro | Asp | Val | Thr | Glu | Ser | Glu | Ser | Gly | 420 | 425 | 430 |     |
| Ser | Pro | Glu | Tyr | Arg | Gln | Gln | Ser | Ala | Val | Pro | Leu | Asp | Glu | Glu | Thr | 435 | 440 | 445 |     |
| His | Ala | Gly | Glu | Asp | Val | Ala | Val | Phe | Ala | Arg | Gly | Pro | Gln | Ala | His | 450 | 455 | 460 |     |
| Leu | Val | His | Gly | Val | Gln | Glu | Gln | Thr | Phe | Ile | Ala | His | Val | Met | Ala | 465 | 470 | 475 | 480 |

Phe Ala Ala Cys Leu Glu Pro Tyr Thr Ala Cys Asp Leu Ala Pro Pro  
485 490 495

Ala Gly Thr Thr Asp Ala Ala His Pro Gly Asn Tyr Glu Val Glu Pro  
500 505 510

Arg Arg Ala Leu Tyr Val Glu Gly Glu Arg Gly Phe Phe Tyr Thr Pro  
515 520 525

Lys Ala Leu Tyr Leu Val Glu Gly Glu Arg Gly Phe Phe Tyr Thr Ser  
530 535 540

Leu Met Thr Ile Ala Tyr Val Met Ala Ala Ile Cys Ala Leu Phe Met  
545 550 555 560

Leu Pro Leu Cys Leu Met Val Asp Tyr Lys Asp Asp Asp Asp Lys  
565 570 575

<210> 129

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 129

Lys Met Asp Ala Glu  
1 5

<210> 130

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 130

Gly Arg Arg Gly Ser  
1 5

<210> 131

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 131

Val Glu Ala Asn Tyr Glu Val Glu Gly Glu  
1 5 10

<210> 132

<211> 10

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 132  
Val Glu Ala Asn Tyr Ala Val Glu Gly Glu  
1 5 10

<210> 133  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 133  
Lys Thr Ile Asn Leu Glu Val Glu Pro Ser  
1 5 10

<210> 134  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
<221> MOD\_RES  
<222> (5)  
<223> Nle

<400> 134  
Lys Thr Ile Asn Xaa Glu Val Glu Pro Ser  
1 5 10

<210> 135  
<211> 10  
<212> PRT  
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<220>  
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<222> (5)  
<223> Nle

<220>  
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<400> 135  
Lys Thr Ile Asn Xaa Glu Val Asp Pro Ser

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10

<210> 136  
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<223> Nle

<220>  
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peptide sequence

<400> 136  
Lys Thr Ile Asn Xaa Asp Val Asp Pro Ser  
1 5 10

<210> 137  
<211> 10  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 137  
Lys Thr Ile Ser Leu Asp Val Glu Pro Ser  
1 5 10

<210> 138  
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<220>  
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peptide sequence

<400> 138  
Lys Thr Ile Ser Leu Asp Val Asp Pro Ser  
1 5 10

<210> 139  
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<220>  
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peptide sequence

<400> 139  
Lys Met Asp Ala  
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<210> 140  
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<220>  
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peptide sequence

<400> 140  
Ser Tyr Glu Val  
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<210> 141  
<211> 10  
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<220>  
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peptide sequence

<400> 141  
Ser Glu Val Ser Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 142  
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peptide sequence

<400> 142  
Asn Leu Asp Ala  
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<210> 143  
<211> 10  
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<220>  
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peptide sequence

<400> 143  
Ser Glu Val Ser Tyr Asp Ala Glu Phe Arg  
1 5 10

<210> 144  
<211> 10  
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<220>  
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peptide sequence

<400> 144

Ser Glu Val Ser Tyr Glu Ala Glu Phe Arg  
1 5 10

<210> 145

<211> 25

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 145

Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
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Glu Val Ser Tyr Glu Val Glu Phe Arg  
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<210> 146

<211> 20

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 146

Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Val Ser Tyr Glu  
1 5 10 15

Val Glu Phe Arg  
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<210> 147

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 147

Lys Thr Glu Glu Ile Ser Glu Val Ser Tyr Glu Val Glu Phe Arg  
1 5 10 15

<210> 148

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 148  
Thr Glu Val Ser Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 149  
<211> 10  
<212> PRT  
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<220>  
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peptide sequence

<400> 149  
Ser Glu Val Asp Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 150  
<211> 10  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 150  
Thr Glu Val Asp Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 151  
<211> 10  
<212> PRT  
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<220>  
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peptide sequence

<400> 151  
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1 5 10

<210> 152  
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<212> PRT  
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<220>  
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peptide sequence

<400> 152  
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1 5 10

<210> 153  
<211> 10

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 153  
Ser Glu Ile Asp Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 154  
<211> 13  
<212> PRT  
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<220>  
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<222> (11)  
<223> Xaa=tryptophan

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 154  
Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
1 5 10

<210> 155  
<211> 18  
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<220>  
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<222> (16)  
<223> Xaa=tryptophan

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 155  
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1 5 10 15

Lys Lys

<210> 156  
<211> 23  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE  
<222> (21)  
<223> Xaa=tryptophan

<220>



<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 156  
Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu Val  
1 5 10 15

Glu Phe Arg Xaa Lys Lys  
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<210> 157  
<211> 28  
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<220>  
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peptide sequence

<220>  
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<222> (26)  
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<400> 157  
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1 5 10 15

Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
20 25

<210> 158  
<211> 13  
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<220>  
<221> SITE  
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<220>  
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peptide sequence

<400> 158  
Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
1 5 10

<210> 159  
<211> 18  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<220>  
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<222> (16)  
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<400> 159  
Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg  
1 5 10 15

Xaa Lys Lys

<210> 160  
<211> 23  
<212> PRT  
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<220>  
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<222> (21)  
<223> Xaa=tryptophan

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide

<400> 160  
Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr  
1 5 10 15

Glu Val Glu Phe Arg Xaa Lys Lys  
20

<210> 161  
<211> 28  
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<220>  
<221> SITE  
<222> (26)  
<223> Xaa=tryptophan

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 161  
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1 5 10 15

Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
20 25

<210> 162  
<211> 13  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE

<222> (11)  
<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 162  
Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
1 5 10

<210> 163  
<211> 18  
<212> PRT  
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<220>  
<221> SITE  
<222> (16)  
<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 163  
Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa  
1 5 10 15

Lys Lys

<210> 164  
<211> 23  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE  
<222> (21)  
<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 164  
Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu  
1 5 10 15

Val Glu Phe Arg Xaa Lys Lys  
20

<210> 165  
<211> 28  
<212> PRT  
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<220>  
<221> SITE

<222> (26)  
<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic peptide sequence

<400> 165  
Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
1 5 10 15

Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
20 25

<210> 166  
<211> 13  
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<220>  
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<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 166  
Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
1 5 10

<210> 167  
<211> 18  
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<220>  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 167  
Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg  
1 5 10 15

Xaa Lys Lys

<210> 168  
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peptide sequence

<400> 168  
Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr  
1 5 10 15

Glu Val Glu Phe Arg Xaa Lys Lys  
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<210> 169  
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<220>  
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<223> Xaa=oregon green

<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 169  
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1 5 10 15

Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Xaa Lys Lys  
20 25

<210> 170  
<211> 10  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 170  
Ser Glu Val Asn Tyr Glu Val Glu Phe Arg  
1 5 10

<210> 171  
<211> 47  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: synthetic  
primer for site-directed mutagenesis of APP

<400> 171  
gagatctctg aaattagtta tgaagtagaa ttccgacatg actcagg

<210> 172  
<211> 48  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
primer for site-directed mutagenesis of APP

<400> 172  
tgagtcacgt cggaattcta cttcataact aatttcagag atctcctc

48

<210> 173  
<211> 47  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: synthetic  
primer for site-directed mutagenesis of APP

<400> 173  
gagatctctg aaagtagtta tgaagtagaa ttccgacatg actcagg

47

<210> 174  
<211> 48  
<212> DNA  
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<220>  
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primer for site-directed mutagenesis of APP

<400> 174  
tgagtcacgt cggaattcta cttcataact actttcagag atctcctc

48

<210> 175  
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<212> DNA  
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<220>  
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primer for site-directed mutagenesis of APP

<400> 175  
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47

<210> 176  
<211> 48  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic  
primer for site-directed mutagenesis of APP

<400> 176  
tgagtcacgt cggaattctg cttcataact aatttcagag atctcctc

48

<210> 177  
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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 177

Val Ser Tyr Glu Val  
1 5

<210> 178

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 178

Val Ser Tyr Asp Ala  
1 5

<210> 179

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 179

Ile Ser Tyr Glu Val  
1 5

<210> 180

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 180

Val Lys Met Asp Ala  
1 5

<210> 181

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
primer for generating mutant construct named  
MBPC125-SYEV

<400> 181  
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47

<210> 182  
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<223> Description of Artificial Sequence: synthetic  
primer for generating mutant construct named  
MBPC125-SYEV

<400> 182  
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48

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peptide sequence

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<223> Description of Artificial Sequence: synthetic  
peptide sequence

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<210> 185  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 185  
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<210> 186  
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<220>  
<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 186  
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<210> 187  
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<212> PRT  
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<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 187  
Ser Tyr Glu Ala  
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<210> 188  
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<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 188  
Ser Tyr Ala Val  
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<210> 189  
<211> 5  
<212> PRT  
<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic  
peptide sequence

<400> 189  
Val Ser Tyr Glu Ala  
1 5

<210> 190  
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<400> 190

Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Trp Lys Lys  
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<210> 191

<211> 23

<212> PRT

<213> synthetic peptide sequence

<400> 191

Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Ile Ser Tyr Glu  
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<210> 192

<211> 15

<212> PRT

<213> synthetic peptide sequence

<220>

<221> SITE

<222> (1)..(1)

<223> amino acid at position 1 is biotinylated

<220>

<221> SITE

<222> (14)..(14)

<223> cys at position 14 is derivatized with an oregon green

<400> 192

Lys Glu Ile Ser Glu Ile Ser Tyr Glu Val Glu Phe Arg Lys Lys  
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<210> 193

<211> 22

<212> PRT

<213> synthetic peptide sequence

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<222> (1)..(1)

<223> amino acid at position 1 is biotinylated

<220>

<221> SITE

<222> (21)..(21)

<223> cys at position 21 is derivatized with an oregon green

<400> 193

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Val Glu Phe Arg Lys Lys  
20

<210> 194

<211> 6806

<212> DNA

<213> fusion protein comprising a maltose binding protein with 125 amino acids from APP C-terminus.

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cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac 240  
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| ggaaccggag ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgtagc   | 4620 |
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<210> 195

<211> 13

<212> PRT

<213> synthetic peptide sequence

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> ACETYLATION (MCA)

<220>

<221> SITE

<222> (11)..(11)

<223> 2,4-dinitrophenyl group after the Lys at position 11

<400> 195

Ser Glu Val Asn Leu Asp Ala Glu Phe Arg Lys Arg Arg  
 1 5 10

<210> 196

<211> 12

<212> PRT

<213> synthetic peptide sequence

<220>

<221> SITE

<222> (4) .. (4)

<223> amino acid at position 4 has been derivatized with a statine

<400> 196

Ser Glu Val Asn Val Ala Glu Phe Arg Gly Gly Cys  
1 5 10

<210> 197

<211> 10

<212> PRT

<213> synthetic peptide sequence

<220>

<221> SITE

<222> (4) .. (4)

<223> amino acid at position 4 has been derivatized with a statine

<220>

<221> SITE

<222> (10) .. (10)

<223> amino acid at position 10 has been derivatized with Bodipy FL

<400> 197

Ser Glu Val Asn Val Ala Glu Phe Arg Cys  
1 5 10